

AMENDMENT UNDER 37 C.F.R. § 1.111

Attorney Docket No. Q77903

U.S. Application No. 10/694,392

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1. – 55. (canceled)

56. A method of fabricating thin film transistors, comprising:
forming at least one semi-conductive film on a substrate;
immersing said substrate in a dopant; and
delivering a laser beam to a plurality of independently selectable locations on said substrate with a plurality of independently tiltable beam steering elements to induce a doping reaction between said dopant and said semi-conductive film at said independently selectable locations.
57. The method claimed in claim 56, wherein said semi-conductive film comprises a semiconductor film.
58. The method claimed in claim 56, wherein said semi-conductive film comprises silicon.
59. The method claimed in claim 58, wherein said semi-conductive film is deposited on an insulating substrate.
60. The method claimed in claim 59 and wherein said insulating substrate comprises glass.
61. The method claimed in claim 56, wherein said locations correspond to locations whereat transistors are to be formed in said semi-conductive film.

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62. The method claimed in claim 56, wherein said immersing said substrate comprises showering ionized molecules onto said substrate.

63. The method claimed in claim 56, wherein said delivering a laser beam comprises splitting a first laser beam into a plurality of sub-beams, and delivering said sub-beams to mutually independently selectable locations.

64. (canceled)

65. The method claimed in claim 64, wherein said delivering a laser beam further comprises modulating said laser beam to deliver said pulses exclusively to said selected locations.

66. The method claimed in claim 56, wherein said delivering a laser beam comprises delivering said laser beam to said selectable locations that are at least partially isolated from other said selectable locations.

67. The method claimed in claim 56, wherein said delivering comprises delivering said laser beam to said selectable locations that vary from other said selectable locations in size.

68. The method claimed in claim 56, wherein said delivering comprises delivering said laser beam to said selectable locations that vary from other said selectable locations in spacing.

69. The method claimed in claim 56, wherein said delivering a laser beam comprises modulating an energy characteristic of said laser beam.

70. The method claimed in claim 69, wherein said delivering a laser beam comprises delivering said laser beam with a first modulated energy characteristic to a first independently

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selectable location, and then delivering said laser beam with a second modulated energy characteristic to a second independently selectable location.

71. The method claimed in claim 56, wherein said delivering a laser beam comprises delivering a pulsed laser beam having a pulse repetition rate of greater than 5 KHz.

72. The method claimed in claim 56, further comprising individually heating each of said selectable locations to at least partially melt said conductive film thereat.

73. The method claimed in claim 56, wherein said delivering a laser beam comprises selecting locations during operation of a laser supplying said laser beam.

74. The method claimed in claim 56, wherein said delivering a laser beam comprises selecting locations during performing a doping reaction induction operation on said conductive film.

75. The method claimed in claim 73, wherein said selecting comprises steering said laser beam to said selectable locations.

76. (canceled)

77. The method claimed in claim 56, wherein said delivering a laser beam comprises delivering said laser beam to said independently selectable locations without an intervening photo mask.

78. The method claimed in claim 77, wherein said delivering a laser beam comprises selecting said independently selectable locations during operation of a laser supplying said laser beam.

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Claims 79. – 110. (canceled)

111. A method of producing thin film transistors on a substrate, comprising:
generating a laser beam;
splitting said laser beam into a plurality of selectably positionable sub-beams; and
directing each of said sub-beams to selectable areas on said substrate with an independently tiltable beam steering element, said selectable areas corresponding to locations whereat said transistors are to be formed, in the presence of a doping gas to induce a doping reaction between said substrate and said doping gas at said selectable areas.

112. The method according to claim 111, wherein each of said selectable areas is at least partially isolated from another one of said selectable areas.

113. The method according to claim 111, wherein at least one of said selectable areas vary from each other in size and spacing.

114. The method according to claim 111, wherein said laser beam is a pulsed laser beam having a pulse repetition rate of greater than 5 KHz.

115. The method according to claim 111, wherein said sub-beams are independently guided so as to interact with said doping gas and with said substrate surface, at each of said selectable areas.

116. The method according to claim 111, further comprising individually heating each of said selectable areas thereby forming bases of said transistors.

Claims 117 – 125. (canceled)

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126. A method of manufacturing an array of thin film transistors, comprising:
depositing amorphous silicon on a substrate;
crystallizing said amorphous silicon by applying laser energy to said amorphous silicon at
a plurality of selectable locations;
applying P type doping to portions of crystallized silicon by delivering laser energy to a
plurality of selectable locations in presence of a P type doping agent-;
wherein said plurality of selectable locations are selected using a plurality of
independently tiltable beam steering elements

127. The method claimed in claim 126, wherein said applying P type doping comprises
forming PMOS channels.

128. The method claimed in claim 126, further comprising: applying N type doping to portions
of crystallized silicon by delivering laser energy to said plurality of selectable locations in
presence of an N type doping agent.

129. The method claimed in claim 128, wherein said applying N type doping comprises
forming NMOS channels.

130. The method claimed in claim 127, further comprising:
applying N type doping to portions of crystallized silicon by delivering laser energy to
said plurality of selectable locations in presence of an N type doping agent.

131. The method claimed in claim 130, wherein said applying N type doping comprises
forming NMOS channels.

132. The method claimed in claim 131, further comprising forming dielectric gates.

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133. The method claimed in claim 131, further comprising: laser treating crystallized silicon at said selectable locations to hydrogenate said selectable locations.

134. The method claimed in claim 132, further comprising:

laser treating said selectable locations in said crystallized silicon in the presence of said P doping agent to form PMOS type source/drains.

135. The method claimed in claim 134, further comprising: laser treating selected areas in said crystallized silicon in the presence of said N doping agent to form NMOS type source/drains.

136. The method claimed in claim 126, wherein at least one of dehydrogenating, crystallizing said silicon, doping and hydrogenating is performed without masking.

Claim 137. (canceled)